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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,572	11/30/2000	Keun No Park	2658-0246P	9754

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EXAMINER

ROMAN, ANGEL

ART UNIT PAPER NUMBER

2812

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/725,572

Applicant(s)

PARK, KEUN NO

Examiner

Angel Roman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 and 6-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kannan et al. U.S. Patent 6,091,056.

Kannan et al. discloses a method of preventing generation of particles in a chamber, the method comprising; mounting a substrate within a chamber of a gas-exposure equipment; decreasing a pressure within the chamber; injecting a surface treatment gas including hexa-methyl-disilane (HMDS) gas into the chamber; and drawing out the surface treatment gas from the chamber while injecting a nitrogen gas into the chamber (see column 2, lines 60-67-column 3, lines 1-16). The step of injecting the surface treatment gas converts the surface of the substrate into an organic material. Kannan et al. also discloses performing the above describe method on substrates such as flat panel displays and semiconductor wafers (see column 2, lines 60-63).

Kannan et al. is applied as above but lacks anticipation on disclosing that moisture is prevented from penetrating into the chamber during the step of drawing out the surface treatment gas from the chamber while injecting a nitrogen gas into the chamber; disclosing a chamber pressure equal or higher than atmospheric pressure

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during the step of drawing out the surface treatment gas; describing a treatment chamber including evacuation lines and ejection lines, wherein the nitrogen is applied through the ejection lines and the gas is evacuated through the evacuation lines; describing elements comprising the substrate, e.g. thin film transistor with gate, source, drain and pixel electrodes or a color filter substrate with one of a color filter and a black matrix; and disclosing that an ordinary gas is evacuated within the chamber.

With respect to disclosing that moisture is prevented from penetrating into the chamber during the step of drawing out the surface treatment gas from the chamber while injecting a nitrogen gas into the chamber, Kannan et al. discloses stopping the HMDS gas supply and supplying pure nitrogen while the chamber is exhausted (see column 3, lines 10-12). In view of this disclosure it would have been obvious to a person having ordinary skills in the art, at the time the invention was made to disclosed that moisture is prevented from penetrating into the chamber during the step of drawing out the surface treatment gas from the chamber while injecting a nitrogen gas into the chamber in the primary reference of Kannan et al. since the chamber is exhausted while pure nitrogen is supplied into the chamber therefore preventing any other gas, e.g. humid air, from entering the chamber. Furthermore regarding the added language in claim one, "preventing moisture in air from penetrating into the chamber", Applicant should note that this is merely result language, which can't be relied upon to define over Kannan et al., since Kannan et al. recited all of the claimed steps and their recited relationships. Moreover the examiner will presume that the recited results are inherent

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in Kannan et al., since all of the claimed steps and the relationship therebetween are met by Kannan et al..

Regarding disclosing a chamber pressure equal or higher than atmospheric pressure during the step of drawing out the surface treatment gas from the chamber, selecting an optimum pressure, e.g. equal or higher than atmospheric pressure, is only considered to be routine optimization of the method disclosed in Kannan et al. since Kannan et al. already suggest supplying pure nitrogen into the chamber, therefore optimizing the method disclosed in Kannan et al. would have been obvious to a person having ordinary skills in the art at the time the invention was made by performing routine experimentation based among other things in a desire accuracy and process costs. Furthermore selecting a pressure equal or higher than atmospheric pressure would have been obvious to one having ordinary skills in the art at the time the invention was made since it may provide a thorough chamber treatment gas purge.

As to describing a treatment chamber including evacuation lines and ejection lines, wherein the nitrogen is applied through the ejection lines and the gas is evacuated through the evacuation lines, these are apparatus limitations and no weight is given to apparatus limitations in method claims (see *In re Edwards* 128 USPQ 387 (CCPA 1961)), therefore no patentable weight is given to claims 6-8. Furthermore it is well known to use chambers comprising evacuation lines and ejection lines to supply and evacuate gases into and out of a chamber, therefore it would have been obvious to a person having ordinary skills in the art at the time the invention was made to describe an ejection line to apply the nitrogen and evacuation lines to evacuate a gas in the

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primary reference of Kannan et al. because is a conventional method use in the art to introduce or extract gases from a chamber.

Regarding describing elements comprising the substrate, e.g. thin film transistor with gate, source, drain and pixel electrodes or a color filter substrate with one of a color filter and a black matrix, it would have been obvious to a person having ordinary skills in the art at the time the invention was made to describe the substrates disclosed by Kannan et al. as being comprised of thin film transistor with gate, source, drain and pixel electrodes or a color filter substrate with one of a color filter and a black matrix since these are conventional elements present in semiconductor wafers and flat panel displays.

With respect to disclosing that an ordinary gas is evacuated within the chamber, Kannan et al. discloses that the method is performed under vacuum, therefore the chamber is evacuated prior to the process and it would have been obvious to a person having ordinary skills in the art at the time the invention was made to disclosed that an ordinary gas is evacuated within the chamber in the primary reference of Kannan et al. since in is implied in the evacuation process.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1-4 and 6-16 have been considered but are moot in view of the new ground(s) of rejection.

4. Applicant's arguments filed 09/09/02 have been fully considered but they are not persuasive. With respect to Applicant argument that Kannan et al. do not disclose preventing moisture in air from penetrating into the chamber by drawing out the surface treatment gas from the chamber while injecting a nitrogen gas into the chamber because it is unknown whether or not Kannan et al. allows atmospheric air to enter the chamber during the purging process, it is noted that the features upon which applicant relies (i.e., allowing atmospheric air to enter the chamber during the purging process) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### **Conclusion**

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shiraishi et al. and Rubin et al. disclosed methods of treating semiconductor substrates with HMDS gas and purging the HMDS gas with nitrogen.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angel Roman whose telephone number is (703) 306-0207. The examiner can normally be reached on Monday-Friday 8:30am-6:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

AR  
November 18, 2002



John F. Niebling  
Supervisory Patent Examiner  
Technology Center 2800